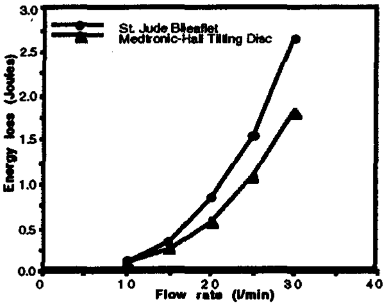
rate and velocity were measured and fluid mechanical energy losses were calculated. Significant differences were found between the valves in certain orientations. In the Steady flow experiments, the mean loss for all stroke volumes was 0.75 Joules for the MH tilting disc valve and 1.03 for the SJM bileaflet valve in their optimum orientations. The tilting disc valve had less energy loss than the bileaflet valve at all stroke volumes ($p < 0.05$). Orientation within the annulus did not significantly affect the energy losses through the SJM valve.



Conclusions: In models of ventricular hypertrophy, there were a distinct hemodynamic advantages in using a specific mechanical valve in its optimal orientation. For the most severe cases of hypertrophy, the MH valve showed both the best and worst hemodynamic profile, depending on its orientation within the annulus.

1042-116 C-Myc Expression Relates to Reversal of Ventricular Function and Hypertrophy in Patients with Aortic Valve Replacement

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In most patients with aortic regurgitation (AR), valve replacement results in reduction in left ventricular dilatation and in increase in ventricular function. However, its mechanism is undetermined. Recently, we reported that proto-oncogene C-Myc is related to extensive cardiac hypertrophy and left ventricular function in patients with chronic AR. However, it has not been clarified whether C-Myc relate to reversal of left ventricular function and cardiac hypertrophy after Aortic valve replacement (AVR). This study is designed to clarify the relationship among the C-Myc expression, cardiac hypertrophy and ventricular function in patients with AR underwent AVR. Four patients (2 male and 2 female, 52 to 73 years old mean; 65 ± 12) with isolated chronic AR who underwent aortic valve replacement were included in this study. Preoperative NYHA class was II in 2 patients, III in 2. Left ventricular ejection fraction (EF), left ventricular end-systolic volume index (LVESVI) and left ventricular mass index (LVMI) before operation were obtained before and a mean of 38 months after AVR. Left ventricular endomyocardial biopsy was performed to assess the myocardial cell diameter (CD), fibrous content (FC), and immunohistochemical staining of C-Myc. After AVR, patients showed significantly lower value in ESVI (42.5 ± 14.4 vs 32.5 ± 13.6 ml/m^2), LVMI (167.7 ± 34.3 vs 126.7 ± 27.5 g/m^2), CD (28.1 ± 9.8 vs 24.1 ± 9.8 μm) than those before AVR. However, there were no differ in EF (71.7 ± 6.1 vs 69.7 ± 11.3%) and EDVI (119.7 ± 28.8 vs 92.5 ± 19.6 g/m^2) and FC (26.5 ± 13.2 vs 23.4 ± 10.4 g/m^2). These patients showed C-Myc expression in more than half nuclei of myocytes (66.3 ± 16.1%) while it has not been detected in normal control. Moreover, these C-Myc expression significantly decreased after AVR (10.1 ± 6.1%) than before AVR. In summary, C-Myc was expressed in the volume overloading heart and decreases in reversal of ventricular function after AVR, suggesting that C-Myc expression may relate to reversal ventricular function and cardiac hypertrophy in patients with after AVR.

1042-117 Evolution of Left and Right Ventricular Function After Surgical Correction of Severe, non Ischemic Mitral Regurgitation

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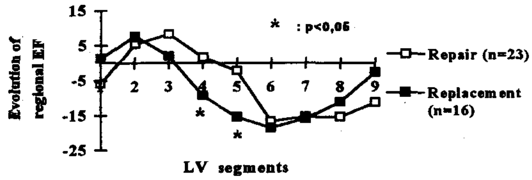
Preservation of heart function is an important goal of surgical correction of mitral valve (MV) regurgitation. We studied the evolution of global and regional left ventricular (LV) and right ventricular (RV) ejection fraction (EF) in 39 consecutive pts (59 ± 12 years) after surgical correction of mitral regurgitation. Radionuclide angiography was performed before and 7 months (217 ± 80 days) after either MV repair (n = 23) or replacement with posterior chordal preservation (MVR, n = 16). LV and RV EF were not different in the 2 groups before surgery. For all the pts, LVEF decreased (64.6 ± 10.1 to 60.1 ± 11.4%, p = 0.002) and RVEF increased (41.7 ± 9.5 to 44.9 ± 9.5%, p = 0.04) after surgery. However, LVEF decreased significantly after MVR (64.1 ± 8.5 to 57.4 ± 10%, p = 0.01) but not after MV repair (65 ± 11.3 to 62.1 ± 12.2%, p = NS), and RVEF was unchanged after MVR (42.9 ± 10.3 to 42.8 ± 8.6%) but increased after MV repair (40.9 ± 9.1 to 46.4 ± 10.1%, p = 0.03). Moreover, there was a significant reduction in contraction in LV segments 4 and 5 (apex and lateral wall) after MVR (Fig).



Thus, the evolution of heart function is better after MV repair than after MVR for mitral regurgitation.

1042-118 Flexible vs. Rigid Ring Annuloplasty: A Finite Element Model

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Purpose: A 3-D finite element computer model was used to compare leaflet stresses and coaptation in normal and dilated valves (18% annular dilatation) vs. valves with flexible (Duran) and rigid (Carpentier-Edwards classic) ring annuloplasty. *Methods:* The rings and valves were simulated using ANSYS 4.4A software. Valves were evaluated during systolic pressure loading (peak = 120 mmHg), and leaflet stresses and time to coaptation were determined. *Results:* In the normal valve, the anterior leaflet was subject to higher tensile stresses than the posterior leaflet which was under compression. Annular dilatation increased all stresses, particularly in the posterior leaflets and at the trigones. Both rings returned the posterior leaflet stresses towards normal. The flexible ring returned anterior leaflet stress closer to normal than the rigid ring. Leaflet coaptation began at 5 ms in the normal state, was delayed by dilatation, and returned towards normal with both rings. *Conclusions:* Ring annuloplasty reduces the stresses and improves coaptation relative to annular dilatation. The success of mitral annuloplasty is likely due to the reestablishment of posterior leaflet compressive stresses and near normal coaptation.

Stress ranges (kPa) in leaflets, and time to coaptation (ms).

	Central Anterior	Trigone Area	Posterior Leaflet	Time at coaptation
Normal	100–410	400–531	−8–225	5
Dilatation	150–580	820–1390	−8–435	45
Flexible ring	100–420	400–503	−8–230	5
Rigid ring	150–570	700–1203	−8–240	10

1042-119 Optimized Oral Anticoagulation by Patient PT Self Monitoring and Self Management

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Epidemiologic evidence indicates that thromboembolism and anticoagulant-related hemorrhage remain the major complications after heart valve replacement. This study assesses a new model of anticoagulant management, with regard to the feasibility and ability, and also the safety and efficacy of patient managed oral anticoagulation with the help of a portable PT monitor. This investigation is a retrospective, non-randomised study with 351 patients on long-term anticoagulation. The study started for the first time in August 1986. The mean follow up is 28 months (3 to 102 months). The study patients reported a total of 28 359 self-monitored INR's. In the recommended target range (INR 2.5–4.5) were 23 264 INR's (82%), above the target range (INR > 4.5) were 679 INR's (2.4%) and below the target range (INR < 2.5) were 4 416 INR's (15.6%). On average the patients measured their INR at a weekly interval. During 834.4 patient-years slight bleedings occured in 64 patients (7.7 per 100 patient-years), bleeding complications requiring medical treatment in 10 patients (1.2 per 100 patient-years) and thromboembolic episodes with transient symptoms in 4 patients (0.5 per 100 patient-years).

Patient self management of oral anticoagulation leads to improved anticoagulation care and to reduced risk of hemorrhagic or thromboembolic complications.